MAY 05 1978

Rockwell International
Atomics International Division

SUPPORTING DOCUMENT

NUMBER	REV LTR/CHG NO.
N704TI990030	SEE SUMMARY OF CHG

PROGRAM TITLE: Decontamination & Disposition of Facilities

DOCUMENT TYPE: Technical Information

KEY NOUNS: Decontamination

DOCUMENT TITLE: Radiological Survey Results - Release to Unrestricted Use, SRE Region IV (West Parking Lot)

ORIGINAL ISSUE DATE:

GO NO.	S/A NO.	PAGE 1 OF TOTAL PAGES 8
07704	40300	REL. DATE 5-4-78

PREPARED BY/DATE	DEPT	MAIL ADDR
D. E. Owens D E Owens	779	T005

IR&D PROGRAM? YES ☐ NO ☒ IF YES, ENTER TPA NO. _____

APPROVALS — DATE

D. F. Kelly D F Kelly 4/19/78 for W. R. McCurnin
J. W. Carroll J W Carroll 4/19/78 M. E. Remley M E Remley (May 2)
W. D. Kittinger W D Kittinger 4-25-78 B. F. Ureda B F Ureda 4-25-78
R. J. Tuttle R J Tuttle 3/27/78

SECURITY CLASSIFICATION

(CHECK ONE BOX ONLY)	DOE	DOD
UNCL	☒	☐
CONF.	☐	☐
SECRET	☐	☐

(CHECK ONE BOX ONLY): RESTRICTED DATA ☐ DEFENSE INFO. ☐

AUTHORIZED CLASSIFIER _____ DATE _____

DISTRIBUTION

*	NAME	MAIL ADDR
*	R. G. Brengle	T143
*	J. W. Carroll	NB02
*	J. M. Harris	T034
*	E. G. Johnson	KB45
	C. R. Johler	LA38
*	W.D.Kittinger (10)	NB02
*	W. R. McCurnin	T020
*	M. E. Remley	NB08
*	G. P. Streechon	NB02
*	R. J. Tuttle	NB13
*	B. F. Ureda	NB02
*	J. H. Walter	T006
*	L. A. Mountford	LB01
*	V. Keshishian	LB34
*	R. S. Hart	JB05
*	M. R. Abbott	T143
*	F. H. Badger	T020
*	S. M. Bradbury	T034
*	R. K. Owen (2)	T143
*	D. E. Owens	T055
*	J. H. Wallace	T034
*	D. F. Kelly	KB45
*	Authorization File	NB13

779-A.56

* COMPLETE DOCUMENT
NO ASTERISK, TITLE PAGE/SUMMARY OF CHANGE PAGE ONLY

ABSTRACT

The results of the radiological survey for Region IV (West Parking Lot) of the SRE are described. For Building 133 and its adjacent area, all survey results are below the applicable limits, indicating that this area may be released to unrestricted use. The area adjacent to the storage yard (T654) is conditionally released subject to a final soil sample survey. The area adjacent to T041 is conditionally released subject to a final radiation survey.

CONTENTS

I. INTRODUCTION

This report covers SRE Region IV, located on a rise, west of the main reactor building (Figure 1). Originally, the area was used as an auxiliary parking lot. During the recovery phase after the Core I fuel cladding incident, additional storage area was needed to store radioactive material removed as part of that program. A fenced-in asphalt pad (T654) located on the south edge of the parking area was designated for this purpose. It was meant to be used as a temporary storage area only. Some fissile material had been stored in this location in several different casks. Currently, the area is used for storage of waste material assigned to the RMDF. Its continuing use requires exclusion from this report.

Several spills of contaminated material have occurred in this storage area, and that section of this region was not surveyed for this report. Soil samples outside the area do not indicate any major contamination at the present time. However, since surface drainage from this yard runs into Region IV, some additional surveys will be needed for a final release. Only a conditional release may be made at this time.

The remaining part of this area is under new construction for a Sodium Disposal facility. This building is designated Building 133, and is the upper structure of T724 removed from Region I. Final survey results for this building are included in this report.

It should be noted that construction of this new facility required lowering the overall grade of the parking lot approximately 1 ft. Surveys made at that time did not indicate the presence of any significant contamination. Further, since new soil was exposed, soil samples taken here were designed more to detect run off into the area, rather than old activity. Each location selected was picked for the highest probability based on past activities throughout this region.

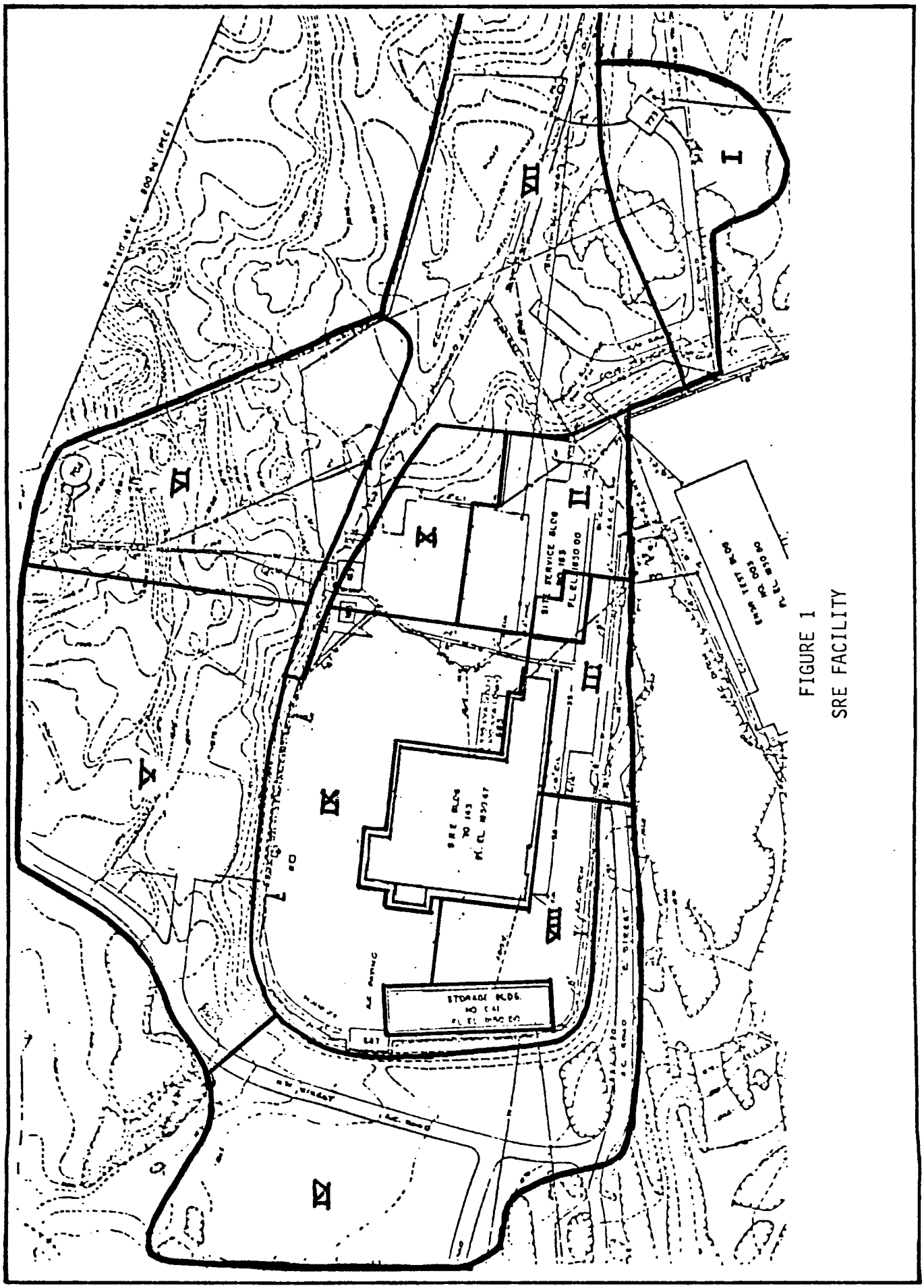

FIGURE 1
SRE FACILITY

II. SURVEY AND RESULTS

A. REMOVABLE CONTAMINATION

Extensive smear tests were made for Building 133 for unrestricted release of the structure from Region I. This building was a part of the Hot Oil Sodium Cleaning facility identified as T724 (see N704TI990027). Additional smears were taken for this report which confirmed the absence of any removable contamination. Whatman filter papers were used for this test and each smear covered approximately 100 cm^2. Locations selected to be smeared were places most likely to have remained contaminated.

All smears for this report were counted on an automatic counting system equipped with a thin window gas proportional detector. This system has a counting efficiency of about 36 percent for Bi-210 activity. A normal background count is approximately 20 counts per minute. Since the system is used in the beta-gamma mode above the alpha plateau, any alpha emitters present would also be detected. The normal efficiency for alpha activity is between 20 and 25 percent.

This area was not subject to contamination by alpha-emitting radionuclides. Therefore, the applicable limit for removable contamination is 100 dpm/100 cm^2 for beta-gamma emitters. All smears were below this limit.

B. SURFACE RADIATION

Two instruments were used for this portion of the report; a Technical Associates Model CP-7 ion chamber detector and a PUG-1A/P-11 probe thin window pancake G-M detector. Several locations experienced "sky shine" from radioactivity outside this region, most significantly along the east edge near Building 041. This building is being used for storage of radioactive waste. Final assessment for surface radiation will be needed here after radiation from Building 041 has been reduced. The maximum reading indicated by the CP-7 ion chamber was 0.6 mrad/hr

along the fence near the building. Readings of 0.1 mrad/hr to 0.15 mrad/hr were recorded atop the hill on the same line with T041. The rest of Region IV indicated average readings of 0.05 mrad/hr. Normal background for this instrument, determined more than 1 mile from the Santa Susana Field Laboratory, was 0.04 mrad/hr.

C. SOIL SAMPLES

Thirty-four soil samples were taken in this region. Wooden stakes were located at points with apparent potential for contamination.

The technique used to determine soil contamination consisted of removing samples from undisturbed top soil. Numbered salve-cans were used for this purpose. A grid network of wooden stakes was spread throughout the region. Each sample spot was modified from the basic plan to account for slope and terrain of the local landscape. Using the can lid as a scoop, soil from various spots located around each sample station was added to the can until it was nearly full. The contents were then mixed thoroughly by shaking. After all samples were collected, each sample can was opened and placed on a hot plate to drive off any moisture present. When dry, a small portion was taken from the can to be sieved through a Coor's sieve (Gooch crucible). From this, a 1-gram portion was transferred onto an aluminum planchette. Alcohol was added and the sample tapped to settle it across the flat surface of the planchette. The sample was then heated to dryness. No chemical binders were added to hold the sample together for counting.

A thin window gas proportional detector operating in the preset count mode was used to count each sample.

A 1-gram prepared KCl standard source (831 dpm) was counted with each group of soil samples. Using the mass-specific activity to calculate detector efficiency accounts for errors associated with self-absorption, backscatter, and the difference between a 2π counter and a 4π source. Thus, based upon the statistical counting error of a single observation, the minimum detection level is approximately 9 pCi at the 95 percent confidence level.

Soil readings varied from 9.4 pCi (new soil) to 80 pCi (near T654) with an average activity concentration between 20-30 pCi.

D. CONCRETE SAMPLES

There are no structures made of concrete within this region. Concrete samples are not applicable for this report.

E. WATER SAMPLES

There are no natural or man-made catch basins to retain water within this region. SRE Surveillance Well 1 was covered during construction activity in this region. Water samples are not applicable for this report.

III. CONCLUSIONS

Building 133 and the immediately surrounding area may be released for unrestricted use on the following basis:

In each type of test performed, all samples indicated levels less than those limits prescribed by the Decontamination and Disposition of Facilities Program for release to unrestricted use.

All appropriate surveys indicate that current existing radioactivity in the area is below the applicable limits for release to unrestricted use.

The area surrounding the storage yard (T654) is conditionally released subject to a final soil sample survey after decontamination and release of T654 or at the termination of the SRE D&D Project.

The area adjacent to T041 is conditionally released subject to a final radiation survey following removal of sources of radiation in T041.